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ABSTRACT

The trainer's manual was written for use with teachers in the field and provides guides for teaching a mini-course on cirterion referenced assessment of children with learning difficulties. There are four sessions outlined, each having an overview of participant goals and trainer activities and a list of objectives for the session. A syllabus is provided in session 1. It is explained that the objectives for the course are the development of the ability to determine specific learning needs of students who demonstrate a variety of learning difficulties. Participants will examine the usefulness of criterion referenced assessment procedures and become acquainted with basic principles and techniques for assessing academic skills. Then participants will select one academic area, devise a criterion referenced test, administer the test to one or more students and identify specific learning needs and objectives based on the test results. (Author/PHR)

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CRITERION REFERENCED ASSESSMENT

A Mini-Course

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Trainer's Manual

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(Trainer's Manual - page numbers on bottom

Readings and Handouts - Roman numerals on top)

PREFACE

Mini-courses were developed by university professors for use with teachers in the field. They are intended to be delivered on site in school districts and may be taught by school-based people who have received prior training. A mini-course is a one credit course which develops specific skills and knowledges related to improving classroom instruction. It is a three stage learning activity! Stage one involves readings, independently done, usually prior to the first session. These readings develop understandings central to the course topic. Stage two is direct instruction, requiring eight to ten hours of contact time.

The number of sessions varies depending on the content of a particular mini-course, the instructor, and the participants. A variety of instructional activities are used to help the participants relate content to their actual work situations. Stage three is an application stage in which participants apply the skills acquired in their classrooms. Follow-up with the instructor completes the mini-course. Upon completion, participants receive one Continuing Education Unit which is applicable for recertification.

The Mini-course Project was sponsored by the Department of Special Education and the Teacher Corps Project at the University of Maine at Farmington.

Project Staff: Dr. Margaret Arbuckle, Dr. Raymond Glass, Ms. Betsy McElvein

June 1979

XXXX

ABSTRACT

Classroom teachers will develop the ability to determine specific learning needs of students who demonstrate a variety of learning difficulties. Participants will examine the usefulness of criterion referenced assessment procedures and become acquainted with basic principals and techniques for assessing academic skills. Then participants will select one academic area, devise a criterion referenced test, administer the test to one or more students and identify specific learning needs and objectives based on test results.

SESSION #1 - OVERVIEW

CRITERION REFERENCED ASSESSMENT

Participants Goals	Trainer Activities
1. Become acquainted with the goals and procedures for the mini-course	Review Handout I "Syllabus" (10 minutes.)
2. Identify the critical differences between criterion and norm referenced tests.	Review Handout II "Examples: Norm and Criterion Referenced Data" (20 minutes.)
3. Identify types of tests as CRT or NRT.	Have participants fill out Handout III; discuss their responses (15 minutes.)
4. Understand how difficult it is to use achievement tests to decide what to teach.	Refer to WRAT Answer Sheet Handout IV (15 minutes.)
5. Become familiar with how criterion referenced data might be used.	Have participants fill out Handout V "What Will You Teach" (40 minutes.)
6. Begin discussion of each participant's topic for a test to be developed.	Ask participants to identify which area(s) they plan to write a test for (share with others.)

Handouts are enclosed and marked with Roman numberals at the top of the page.

SESSION #1

CRITERION REFERENCED ASSESSMENT

Objectives: Participants will:

1. BECOME ACQUAINTED WITH THE GOALS AND PROCEDURES FOR THE MINI-COURSE (10 minutes)

   Instructor Notes:

   Review Handout I, entitled "Syllabus."

2. IDENTIFY THE CRITICAL DIFFERENCES BETWEEN CRITERION AND NORM REFERENCED TESTS (25 minutes)

   Instructor Notes:

   A. State that the major way to differentiate CRT's and NRT's is by the data the test provides.

   B. Direct the participants to read Handout II, "Norm and Criterion Referenced Date" and respond to the questions at the bottom of the page. In your discussion make the following points:

      1. NRT's don't provide data as to what the person knows--only his position.
      2. CRT's do not compare what an individual knows in relation to others.
      3. CRT's aid the teacher in knowing what to teach.

   C. Direct the participants to Handout III (see notes on Handout III, p.6 for discussion).

3. IDENTIFY SELECTED TEST SCORES AS CRT OR NRT (15 minutes)

   Instructor Notes:

   A. Have participants fill out Handout III, "Test Report Summary." Ask individuals to share their responses with the group (see attached Handout III for suggested answers).

   B. Note that some tests can be NRT and CRT, depending on how the data are analyzed. (These are indicated on the handout.)

4. UNDERSTAND HOW DIFFICULT IT IS TO USE ACHIEVEMENT TESTS TO DECIDE WHAT TO TEACH (15 minutes)

   Instructor Notes:

   A. Using Handout IV, have participants note grade equivalents for raw scores 17, 20 and note that one year's teaching is represented by three problems. Discuss: "Can a year's math be represented acequately by three problems?"

   B. Repeat with several other scores.

5. BECOME FAMILIAR WITH HOW CRT DATA CAN BE USED TO DETERMINE WHAT TO TEACH (40 minutes)

Instructor Notes:

A. Have participants write a behavioral objective for each bit of data. (Handout V)

B. Assist class members with the writing of the objectives. Insure that the objectives describe the student's behavior and include a mastery criteria.

(Example Objective for #1):

John will orally read a third grade text pronouncing the words at a 90% accuracy level.

C. During sharing, point out that objectives may be different and correct.

6. SELECT A SKILL AREA TO BE USED AS A BASIS FOR DEVELOPING THEIR OWN (30 minutes)

Instructor Notes:

A. State that the remainder of the sessions will be utilized to devise CRT's.

B. Justify teachers writing their own tests by stating:

1. You should measure skills you are teaching--commercial tests do not often do that; they often fail to measure what is taught or measure skills which are not taught.

2. Teacher-made tests are easy to change over time and don't cost a lot of money.

C. After the participants have written down the area they plan to devise a test for, make the following points:

1. The areas should not be too broad (for example: all language skills at the Jr. High level).

2. The area identified ought to include at least a unit of instruction or be broad enough to be practical.

Syllabus
For
CRITERION REFERENCED ASSESSMENT

Mini-Course

PURPOSE: This course is designed to provide classroom teachers with the skills to devise and administer informal criterion referenced tests. The use of criterion referenced assessment procedures will insure that precise behavioral data is obtained. This will enable the teacher to be more accountable and to better meet the needs of the special needs child.

Specific Objectives: At the end of the instructional period each participant will:

1. Describe the basic differences between criterion referenced and norm referenced tests.
2. Compare the use of data obtained from criterion and norm referenced tests.
3. Identify the appropriate uses of accuracy, rate and duration to measure academic skills.
4. Accurately measure a variety of academic behaviors.
5. Utilize appropriate techniques to establish minimum performance standards for children in selected academic areas.
6. Identify and list tasks and objectives within selected curriculum areas.
7. Construct test materials and record keeping systems.
8. Administer their assessment instrument to a child and record performance data.

Course Requirements:

Due to the intensive nature of the course it is expected that the one hour college/ re-certification credit be awarded to those individuals who complete the following activities:

1. Attend the class meetings.
2. Submit adequate test report within the agreed upon time limits.

All participants who meet these requirements will receive a grade of "P". Class times will be announced at the beginning of the course. The criteria for the test report will be provided at the end of the instructional period.

EXAMPLES: NORM AND CRITERION REFERENCED DATA

Norm referenced test scores provide the teacher with the ability to compare an individual's score with the average score obtained in a large population. Some examples might be:

1. Wide Range Achievement Test-spelling = 3.4
2. Stanford Binet IQ - 112
3. Geometry grade = c+
4. Scholastic Aptitude Test - 456

Criterion referenced tests allow the teacher to compare a student's performance with a preselected standard. Some examples are:

1. The student correctly stated 80% of his six times tables.
2. The student read CVC words containing the short a sound @ 100% accuracy at a rate of 50 per minute.
3. The student identified six of the seven major causes of the civil war in America.

After reviewing the above material respond to the following questions:

1. Which type of test NRT or CRT would be best for determining <u>what</u> to teach? Justify your choice.

2. Which type of test might be used to select an individual who knows more than others in his class? Why?

TEST REPORT SUMMARY

Directions: Indicate which scores are likely criterion-referenced and which scores are norm-referenced.

Mark was tested to determine his academic needs. Several examiners were utilized to generate the following data:

___1. IQ = 92

___2. Woodcock Reading: 2.1 - word attack, 1.4 - comprehension

___3. Subtraction facts 80%

___4. Sociogram shows him to be an outcast

___5. Does not consistently write on the line (30% of the letters in one paragraph)

___6. Is low in his phonics skills (below grade level)

___7. Auditory discrimination skills are in the 30th percentile

___8. Oral reading is slow (30 words per minute 2nd grade material)

___9. Frequently makes errors when borrowing (successfully borrowed in 5 of 20 two digit-two digit problems)

___10. Is the fastest runner in his physical education class

___11. On the Visual Motor Integration Test his age equivalent score was 7.3

___12. He correctly recognized 13 of 15 verbs in selected sentences

___13. He can tell time correctly 100% of the time

___14. Mark can identify the correct operation (+ - x ÷) 90% of the time

Be prepared to discuss your reasons for identifying each test or procedure as Norm or Criterion Referenced.

KEY

TEST REPORT SUMMARY

Directions: Indicate which scores are likely criterion-referenced and which scores are norm-referenced.

Mark was tested to determine his academic needs. Several examiners were utilized to generate the following data:

N 1. IQ = 92

N 2. Woodcock Reading: 2.1 - word attack, 1.4 - comprehension

C 3. Subtraction facts 80% correct

N/C 4. Sociogram shows him to be an outcast (NRT if the reason the child was labeled was that he was below average in the number of children who chose him.)

C 5. Does not consistently write on the line (30% of the letters in one paragraph)

N 6. Is low in his phonics skills (below grade level)

N 7. Auditory discrimination skills are in the 30th percentile

C 8. Oral reading is slow (30 words per minute 2nd grade material)

C 9. Frequently makes errors when borrowing (successfully borrowed in 5 of 20 two digit-two digit problems)

N 10. Is the fastest runner in his physical education class

N 11. On the Visual Motor Integration Test his age equivalent score was 7.3

C 12. He correctly recognized 13 of 15 verbs in selected sentences

C 13. He can tell time correctly 100% of the time

C 14. Mark can identify the correct operation (+ - x ÷) 90% of the time

Be prepared to discuss your reasons for identifying each test or procedure as Norm or Criterion Referenced.

Some data can be either criterion referenced or norm referenced. It is norm referenced if the score is reported as a comparison with the class, grade or other group. It is criterion referenced if the score is interpreted as a percentage or is a description of a performance.

WRAT ANSWER SHEET

1. Counts 1-5 2. Counts 6-15 3. Reads 3 4. Reads 5 5. Reads 6
6. Reads 17 7. Reads 41 8. Pennies 3-1 9. Apples 3 + 4 10. Marbles 9-3

10

WRITTEN PART

$2\frac{1}{2} + 1\frac{1}{2} =$ ____

$\frac{1}{2}$ of 30 = ____

$$\begin{array}{r} 43 \\ +\ 6 \\ \hline \end{array} \qquad \begin{array}{r} 94 \\ -\ 6 \\ \hline \end{array} \qquad \begin{array}{r} \$4.95 \\ \times\ 3 \\ \hline \end{array} \qquad \begin{array}{r} 726 \\ -\ 349 \\ \hline \end{array} \qquad \begin{array}{r} 229 \\ 5048 \\ 63 \\ +\ 1381 \\ \hline \end{array}$$

17

$9\overline{)4527}$

$1\frac{1}{2}$ ft. = ____ in.

$2 -$ ____ $= \frac{1}{4}$

Add:

$6\frac{1}{4}$
$1\frac{3}{8}$
$4\frac{1}{2}$

$$\begin{array}{r} 809 \\ \times\ 47 \\ \hline \end{array}$$

Write as percent:

.42 = ____%

23

Subtract:

$10\frac{1}{4}$
$7\frac{3}{8}$

Multiply: 6.23 × 12.7

Find average: 34, 16, 45, 39, 27

Ans. ____

Write as decimal: $52\frac{1}{2}\%$ = ____

Write as percent: $\frac{3}{8}$ = ____%

$2.9\overline{)308.85}$

29

Add: 3 ft. 6 in.
5 ft. 5 in.
8 ft. 11 in.

M + 2 = 5

M = ____

2x = 3

x = ____

$6 \times 3\frac{7}{8}$ = ____

15% of 175 = ____

Write as common fraction in lowest terms: .075 = ____

The complement of an angle of 30° = ____

36

4^3 = ____

.25 + $1\frac{1}{8}$ = ____

If a = 7, b = 3,

$a^2 + 3b$ = ____

$\frac{1}{4}\%$ of 60 = ____

66 sq. ft. = ____ sq. yd.

Solve: $\frac{7 - (6+8)}{2}$ = ____

Add:

$$\begin{array}{r} -x - y - 23 \\ x - y + 22 \\ \hline \end{array}$$

43

Factor: $r^2 + 25 - 10r$

Ans. ____

$\frac{r^2 - 5r - 6}{r + 1}$

Ans. ____

Change to familiar numerals: MDCXCI = ____

Find interest on $1,200 at 6% for 70 days. Ans. ____

$3p - q = 10$
$2p - q = 7$
p = ____
q = ____

$\sqrt{2ax} = 6$
x = ____

$\frac{7}{D} = \frac{6}{x}$
x = ____

51

Find square root: $\sqrt{67081}$

Ans. ____

$\log_{10}\left(\frac{1}{100}\right)$

Ans. ____

$\log_5 5\sqrt{5}$

Ans. ____

Reduce: $\frac{k^2 + k}{k^2} \cdot \frac{3k - 3}{k^2 - 1}$

Ans. ____

Find root: $2x^2 - 36x = 162$

Ans. ____

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ARITHMETIC—LEVEL II: FOR INDIVIDUAL AND GROUP COMPARISONS USE ONLY STANDARD SCORES ON PAGES 30 TO 42 OF MANUAL.

Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade	Score	Grade
0	N.9	4	Kg.2	8	Gr.1.0	12	2.9	16	4.9	20	6.3	24	7.1	28	8.5	32	10.8	36	12.8	40	14.9	45	17.7
1	Pk.2	5	Kg.4	9	1.5	13	3.4	17	5.3	21	6.5	25	7.4	29	9.0	33	11.3	37	13.3	41	15.4	46	18.3
2	Pk.5	6	Kg.6	10	1.9	14	3.9	18	5.7	22	6.7	26	7.7	30	9.5	34	11.8	38	13.8	42	15.9	47	18.9
3	Pk.9	7	Kg.8	11	2.3	15	4.4	19	6.1	23	6.9	27	8.0	31	10.1	35	12.3	39	14.4	43	16.5	48	19.5
																				44	17.1	49	20.0

V

WHAT WILL YOU TEACH?

For each criterion referenced test report listed below, write an appropriate behavioral objective.

1. John orally read a second grade text. Seventy-five percent of the words were read correctly.

2. On a test where the functions of the digestive organs were to be described, Mary correctly described all but the gall bladder and the small intestine.

3. Given a list of 20 sentences Sue could correctly identify 60% of the verbs.

4. When constructing the broomholder, Jim correctly utilized all tools except for the 10" hand plane.

Be prepared to share your objectives with other members of the class. The object of this exercise is to show that CRT data can tell the teacher what to teach.

SESSION #2 - OVERVIEW

CRITERION REFERENCED ASSESSMENT

Participant Goals	Trainer Activities
1. Demonstrate their understanding of the differences between NRT's and CRT's.	Ask: 1. What is the difference between CRT's and NRT's? 2. In their use, how are the tests different? (5 minutes)
2. Develop an understanding of the task of devising a CRT.	Refer participants to Handout VI, titled "Devising a CRT: Overview" (10 minutes).
3. Be able to identify instructional objectives within an instructional area.	Refer participants to Handout VII titled "Identifying Instructional Objectives" (70 minutes).
4. Begin to identify skills instructional objectives within their identified area.	Have participants follow the same procedure as demonstrated on the handout for the area in which they are devising a test. Assist as needed. (35 minutes)

Handouts are enclo-sed and

Handouts are enclosed and marked with Roman numerals at the top of the page.

SESSION #2

CRITERION REFERENCED ASSESSMENT

Objectives: Participants will:

1. DEMONSTRATE THEIR UNDERSTANDING OF THE DIFFERENCES BETWEEN NRT'S AND CRT'S (5 minutes)

Instructor Notes:

Review these points from Session #1 by asking the following questions:

A. What is the major difference between norm and criterion referenced tests? (CRT's compare individual performance with standard; NRT's compare individuals with the average or group performance).

B. In their use, how are the two types of tests different? (NRT's can be used to determine relative level; CRT's can be used to select instructional goals).

2. DEVELOP AN UNDERSTANDING OF THE TASK OF DEVISING A CRT (10 minutes)

Instructor Notes:

A. Refer participants to Handout VI in materials packet. Describe each point listed below:

(1) The subject area to be tested needs to be identified and delimited to a practical size.

(2a) Any academic area can be broken down and analyzed in terms of specific objectives.

(2b) For example, reading can be broken down into phonics, oral reading and comprehension; phonics can be further divided into vowels, consonants. This process can be continued until finer distinctions are made.

(3a) There are three commonly used measures in education (accuracy, rate, time).

(3b) Appropriate use of these measures will enable us to determine "how well" an individual performs in a given area.

(3c) An example is accuracy; if a child gets 80% on a test it is generally agreed upon that the performance is better than the child who obtains 20%.

(4a) Once the skills to be measured have been identified and the appropriate measure determined, the test materials must be written and/or assembled.

(4b) Examples of these are test questions, flashcards, worksheets, stopwatches, etc.

(5a) To keep the system orderly and to insure ease of use a record keeping system needs to be devised.

(5b) Summarize by stating that the participants will follow the sequence outlined in Handout V and as each member has identified a subject area to be tested the next step will be to identify instructional objectives for the area.

3. IDENTIFY AND LIST INSTRUCTIONAL OBJECTIVES FOR THEIR SELECTED SUBJECT AREA (70 minutes)

Instructor Notes:

A. Refer participants to Handout VII. Read through examples as a group. Be prepared to make the following statements if necessary.

1. Skill areas may be broken down into many subskills or behaviors. The two step breakdown in the sample is not necessarily appropriate for all skill areas.

2. The number of skills or objectives may vary according to teacher judgment. A finer breakdown is usually necessary for younger or retarded students.

B. When individuals or pairs fill out possible subskills and behavioral objectives, note that there are many approaches- many different responses may be correct. Encourage sharing.

4. BEGIN TO IDENTIFY SKILLS AND INSTRUCTIONAL OBJECTIVES WITHIN THEIR IDENTIFIED AREA (35 minutes)

Instructor Notes:

A. Have each individual a) list the subskills and b) begin writing behavior objectives.

B. At the end of the alotted time period review Handout VI and note that the class is working on step #2, which is to be completed by next session. Each participant should bring a list of objectives for their area.

(as shown below)
Objectives

1.

2.

3.

etc.

Have them leave space for 3 (1") columns to be used later

VI

DEVISING A CRT: OVERVIEW

1. Determine the subject area to be tested.

2. Identify the instructional objectives for the area.

3. Determine method of measurement of objectives/establish minimum performance standards.

4. Assemble test materials (questions, answer sheets, etc.).

5. Devise a system to record student performance.

IDENTIFYING INSTRUCTIONAL OBJECTIVES

Skill Area: Language Skills

1. The first step is to delimit the skill area to be tested. In this sample exercise Language was first broken down into two major areas. These areas were then further defined to produce the following list.

I. LANGUAGE

A. Grammar

1. Subject/preposition
2. Punctuation
3. Diagramming
4. Word Usage

B. Expression

1. Vocabulary
2. Sentences
3. Outlines
4. Reports

You may want to be more specific. Each of the areas listed can also be broken down further, for example:

Punctuation

a. exclamation mark
b. question mark
c. semi-colon
d. colon
e. dash
f. period
g. comma
h. quotation marks

2. Once the skill areas have been identified as shown above, each skill should be converted into an instructional objective. The type of instructional objective you devise depends on what level of knowledge you wish the student to master. Some examples for exclamation marks follow: The students will:

* (you want the students to recognize exclamation marks)

point to the exclamation mark when presented with cards with ! . ; : marks printed on them when given a verbal command.

* (you want the students to demonstrate their knowledge of the use of ! marks)

correctly place 9 of 10 required ! marks in twenty sentences.

* (you want the student to exhibit a higher level of knowledge)

write a 200 word theme correctly using ! marks a minimum of five times.

Of course, there are many possible objectives for any skill area. You, as the teacher, should devise objectives which reflect the level of knowledge you wish your students to attain.

3. Now, practice identifying instructional objectives; follow the same procedure to identify how you might begin to teach a student to tell time.

Goal: Accurate time telling: (write in some possible subskill areas)

Major areas:

1. Parts of a clock
   a. minute hand
   b. _____
   c. _____

2. Deals with numbers
   a. recognizes numerals 1-12
   b. counts by 5's to 60
   c. _____
   d. _____

3. Position of hands
   a. reads hour hand
   b. _____
   c. _____

At this point share your lists with your classmates. Now write objectives you deem appropriate for position of hands. A possible first objective might have the child recognize the "o'clock" times e.g., 1:00, 2:00, etc.

SESSION #3 - OVERVIEW

CRITERION REFERENCED ASSESSMENT

Participant Goals	Trainer Activities
1. Participate in a critique of other's lists of objectives.	Divide group into 2's or 3's and have them review each other's objectives (20 minutes).
2. Select an appropriate measure for each behavior listed in their skill area.	Refer to instructor notes. Short exercise is contained on Handout VIII. (50 minutes).
3. Identify an appropriate level of performance for each objective in their test.	Have each participant label the 3rd column of their objective list "minimum criteria". Refer to Instructor Notes: (50 minutes).

Handouts are enclosed and marked with Roman numerals at the top of the page.

SESSION #3

CRITERION REFERENCED ASSESSMENT

Objectives: Participants will:

1. PARTICIPATE IN A CRITIQUE OF OTHER'S LISTS OF OBJECTIVES (20 minutes)

   Instructor Notes:

   A. Have participants share their lists of objectives with one or two peers. Ask them to provide assistance and feedback.

   B. Circulate during the process to provide additional assistance.

2. SELECT AN APPROPRIATE MEASURE FOR EACH BEHAVIOR LISTED IN THEIR SKILL AREA (50 minutes)

   A. State: Measurement of academic skills should be selected to communicate to us "how well" a student performs.

      For example, ask the class to identify the measure in the following statements: (discuss each)

      (1) The man ran the mile in 4:00. (time is the measure)
      (2) The student recited six times tables. (accuracy, duration, rate)
      (3) The student wrote a research report. (accuracy, duration)
      (4) The student computed the correct interest. (accuracy, duration)
      (5) The student spelled the words in the lesson. (accuracy, duration)
      (6) The student constructed a broomholder. (accuracy, duration)
      (7) The student orally read from her reader. (accuracy, rate)

   B. Note that while not all behaviors must be timed, we could generally say that if accuracy was at the appropriate level the student working the fastest is usually considered to be "better."

   C. Refer to Handout VIII, "Measurement of Academic Skills." A completed copy has been attached. Note that other ways of measurement would also be appropriate. The teacher should select the measure which is practical. Some considerations for discussion follow:

      (1) If a student is working on difficult problems which may take an hour to solve, rate may not be useful; so, duration should be the measure.

         a. The student is asked to write a report on the agricultural products from Brazil.
         b. The student is asked to complete an end table in shop class.

(2) rate cannot be used if the teacher is controlling the child's speed of response.

a. The teacher holds up flash cards one at a time and asks for a response from the child: (whether or not the teacher was fast or slow would affect the child's speed of response).

b. The teacher points to the problem the child is to answer.

(3) rate cannot be used if you have tasks of uneven difficulty (because the student could do easy ones fast and difficult ones would take longer). All must be the same.

a. 4 x 2 = ___ 42 x 2 = ___ 463 x 4 = ___ 902 x 903 = ___

b. not nothing establishment onamotapoea

D. Participants should refer to their list of objectives and label the second column as "Measure used". Individuals should then determine the measures they plan to use for each behavioral objective. (A = accuracy; R = rate; D - duration). It may be useful to have the group members assist each other. Once the group is finished they should discuss why they selected their measures.

3. IDENTIFY AN APPROPRIATE LEVEL OF PERFORMANCE FOR EACH OBJECTIVE IN THEIR TEST (50 minutes)

Instructor Notes:

A. State that we need to determine how well a student needs to perform a particular behavior in order to say whether or not the student has mastered a particular skill. There are three practical ways to establish minimum performance standards:

1. We can use common sense to set a standard, we can rely on our experience or professional judgement. (Refer participants to Handout IX in Materials Packet). They are to complete the first three items on their own.

a. Ask the participants to share the minimum criteria they have selected.

b. Note that differences are to be expected as their are no "Universal" standards. (If, however, you are concerned about the minimum standard you have selected you may wish to try method 2 as follows:

2. We can determine a minimum standard by using another student's performance as a standard. Refer to Handout X.

a. Conduct a 30 second timing on a class volunteer who role plays a competent student. Compare this student's performance with the criteria already established. (were the common sense criteria appropriate?)

b. Repeat for Objective #2 (Handout X) (Is the performance vastly different from expectations?)

c. Now have each member of the class complete the exercises as a competent child might do them and determine the class averages. Then have them complete the second part of Handout IX. Discuss as needed.

B. Have the participants select a common sense standard for each of their objectives. Continue assistance until end of class. Ask class to refine their criteria by testing individuals or groups in their classes before the next class. These should be written in the third blank column of their list of objectives which they are to label as "minimum standards".

MEASUREMENT OF ACADEMIC SKILLS

Measurement Term	How Expressed	Examples
1. Accuracy	% correct	a. The class scored 100% on a math test. b. The student's shop project was 50% completed.
2. Rate	number of behaviors in a given unit of time	a. A student reads at 100 words per minute. b. A student answered times tables problems @ 50 per minute.
3. Duration	time required for a behavior	a. It took a student 30 minutes to complete a workbook. b. A student ran 100 meters in 13 seconds.
	time between presentation of a material and student response	a. The student gave the correct answer 5 seconds after seeing the flashcard. b. The student began working 10 minutes after receiving the workbook page.

For each skill listed below, select a measure or measures which might be used (A = accuracy, R = rate, D = Duration).

_____Student knowledge of multiplication facts.

_____Student knowledge of American history

_____Student ability to use english grammar

_____Oral reading skill

_____Reading comprehension

_____Writing a research report

_____Cursive handwriting

ESTABLISHING MINIMUM PERFORMANCE STANDARDS

For each behavioral objective listed below, select an appropriate minimum performance standard.

Use your "common sense" to determine minimum performance criteria.

1. Jenny will orally read from her 5th level text at a rate of _____ words per minute and _____% accuracy before she begins the 6th level text.

2. Duncan will write the answers to his nine times tables at a rate of _____ words per minute @ _____% accuracy.

3. Walt will complete twenty item abbreviations worksheets with _____% accuracy and within _____ minutes.

STOP HERE

Now that you have determined a "class average" write in what you now believe the minimum standards to be.

1. Jenny will orally read from her 5th level text at a rate of _____ words per minute and _____% accuracy before she begins the 6th level text.

2. Duncan will write the answers to his nine times tables at a rate of _____ words per minute @ _____% accuracy.

3. Walt will complete twenty item abbreviations worksheets with _____% accuracy and within _____ minutes.

To be used to establish minimum performance standards.

Objective #1: Take a 30 second oral reading sample; determine the rate per minute and % correct.

Before you use a thermometer, shake it down. Grasp the end opposite the bulb between the thumb and first finger. Snap it down vigorously. You should keep doing this until the terperature reading is below 98.6°. Be careful that the thermometer doesn't slip from your fingers. Insert the bulb end of the thermometer under your tongue. Make sure your mouth is kept closed. No talking! Keep it there for three minutes. Remove the thermometer by the end opposite the bulb. Hold it horizontally with the sharp edge facing you. Roll it until the mercury column comes into view. The degrees are marked off and numbered. The normal temperature is marked with an arrow or in red. If your temperature is around 98°, everything is fine. If it gets much beyond this, call a doctor.

Objective #2: Take a 30 second sample; determine accuracy and rate.

6 x 9	6 x 9	8 x 9	4 x 9	0 x 9	4 x 9	4 x 9	6 x 9	0 x 9	3 x 9	9 x 9	5 x 9	5 x 9	5 x 9
2 x 9	7 x 9	7 x 9	4 x 9	4 x 9	4 x 9	7 x 9	2 x 9	9 x 9	7 x 9	0 x 9	9 x 9	0 x 9	9 x 9
4 x 9	8 x 9	10 x 9	2 x 9	8 x 9	9 x 9	5 x 9	9 x 9	9 x 9	5 x 9	1 x 9	3 x 9	1 x 9	8 x 9

Objective #3: Determine the accuracy and duration of time it takes to complete the following "worksheet".

Across from each abbreviation write the word for which it stands.

1. Mich _____
2. N.C. _____
3. Treas. _____
4. Supt. _____
5. Ore. _____
6. Ill. _____
7. Anon. _____
8. Sec. _____
9. Lt. _____
10. Ga. _____
11. etc. _____
12. B.C. _____
13. Co. _____
14. Inc. _____
15. Hon. _____
16. M.D. _____
17. A.D. _____
18. Tex. _____
19. N.H. _____
20. Wyo. _____

SESSION #4 - OVERVIEW

CRITERION REFERENCED ASSESSMENT

Participant Goals	Trainer Activities
1. Determine appropriate test materials for testing student performance on behavioral objectives.	Direct participants to Handout XI. Refer to instructor notes (50 minutes)
2. Devise an appropriate record keeping system for their informal test.	Refer to instructor notes (15 minutes).
Summary: Understand Final assignment.	Refer to notes and Handout XII. (55 minutes).

Handouts are enclosed and marked with Roman numerals at the top of the page.

SESSION #4

CRITERION REFERENCED ASSESSMENT

Objectives: Participants will:

1. DETERMINE APPROPRIATE TEST MATERIALS FOR TESTING STUDENT PERFORMANCE ON BEHAVIORAL OBJECTIVES (50 minutes)

Instructor Notes:

A. While referring to Handout XI make the following points:

1. simple multiplication has been divided into subskills.
2. these subskills have been arranged in the order they would likely be taught.
3. minimum performance standards have been established and written down.
4. The next step is to determine what materials to use. Some examples might be:

a. flashcards
b. worksheets
c. blackboard exercises

Then, have each fill out the blanks in Handout XI by selecting a type of test.

B. Have each class member construct a paper and pencil test for each subskill. Be sure to have them include enough problems for each section to measure student performance.

C. Once the tests are completed have them test each other and determine level of performance for each objective on their test. (The class member should play the role of a student while taking the test).

Summarize the activity by correcting misconceptions about measurement which may include:

a. we may be concerned about speed or rate in assessment, that does not mean that all students need to be faced with an emphasis on speed during teaching.

b. there are times when rate or duration are equally logical choices.

2. DEVISE AN APPROPRIATE RECORD KEEPING SYSTEM FOR THEIR INFORMAL TEST (15 minutes)

Instructor Notes:

A. Devising record keeping is an important last step. Generally a coding system may be advantagious.

1. For a sample coding system refer to multiplication sheet Handout XI.

Skill 1 = blank means skill not assessed

Skill 2 = slash mark means skill assessed, student did not meet criteria

Skill 3 = X means student met criteria

Have each participant fill out the blank spaces for the test role play they have just completed in the previous exercise. (check for accuracy).

2. Behaviors may also be graphed. When the performance meets criteria, then the date might be entered in the roll book.

3. The final record keeping system should be as simple and easy to use as possible.

SUMMARY - (55 minutes)

1. Refer participants back to Handout VI. Note that the instruction has followed the outline for devising a CRT.

2. Pass out the sample Criterion Referenced Test XIII (decoding) for their analysis -- state that the finished CRT should look somewhat like the sample.

3. Spend the remainder of the time working on tests. Each member should have written down their materials/type of test by the time they leave. (Go over Handout XI at the end of the session.)

MULTIPLICATION SKILLS SHEET

Objectives	Measure Used	Minimum Standards	Materials: Type of Test
The Student:			
1. Writes answers to two single digit multiplication combinations. example: $\begin{array}{r} 7 \\ \times\ 6 \\ \hline \end{array}$	Accuracy rate	100% 60/min.	
2. Writes answers to problems where one factor is two digits. example: $\begin{array}{r} 15 \\ \times\ 3 \\ \hline \end{array}$	Accuracy rate	95% 40/min.	
3. Writes answers to two 2 digit numerals. example: $\begin{array}{r} 57 \\ \times\ 23 \\ \hline \end{array}$	Accuracy rate	90% 7/min.	
4. Writes answers to two 3 digit numerals. example: $\begin{array}{r} 490 \\ \times\ 107 \\ \hline \end{array}$	Accuracy rate	85% 3/min.	
5. Writes answers to multi-digit numerals. example: $\begin{array}{r} 6613 \\ \times\ 1497 \\ \hline \end{array}$	Accuracy Duration	85% 45 seconds	

SAMPLE RECORD KEEPING SYSTEM

MULTIPLICATION

Student Name — Objective #'s

	1	2	3	4	5
Roberta	X	X	/	/	
Helen	X	/	/	/	
Richard	/	/			
Alice	/	/			/
Jenny	X	X	X	X	/

CRITERION REFERENCED ASSESSMENT
INDIVIDUAL PROJECT OUTLINE

Project to be mailed to:

Name_____

Address_____

_____

Phone_____

Project due date:_____

From:

Name_____

Address_____

_____

Phone_____

SUBJECT AREA FOR CRITERION REFERENCED TEST:

_____

INSTRUCTIONS:

Each participant is required to devise and use a criterion referenced test in any subject area of their choosing. The following items should be included:

1. A list of the behaviors to be tested.
2. A list of the measures used.
3. A listing of minimum criteria for each behavior.
4. Applicable test materials.
5. A record keeping system.
6. A brief assessment report describing the performance of at least two pupils who took your test.

    a. Utilize the record keeping system you devised to record performances.
    b. Identify the skills which would likely be selected as instructional goals for each pupil.

THANK YOU.

CRITERION REFERENCED TEST

DECODING

When presented with the appropriate visual stimulus, the student will:

OBJECTIVES	MEASURE USED	MINIMUM STANDARDS	MATERIALS: TYPE OR TEST
1. Say the sound for letter(s) presented (recognition).	accuracy duration	100% within 2 seconds	Flashcards
2. Read phonetically regular words (blending).	accuracy duration rate	100% within 2 seconds 50 per minute	Flashcards and/or test
3. Read phonetically irregular words.	accuracy rate	100% 50 per minute	Word list
4. Read multisyllable words.	accuracy rate	90% 30 per minute	Word list
5. Read sentences	accuracy rate	90% 100 words per minute	Word list
6.*Read grade level paragraphs.	accuracy rate	90% 120 words per minute	Child's text or library book

* Grade level materials may be selected by assessing the child's level on a norm referenced reading test.

INDIVIDUAL RECORD FORM: DECODING

☐ =Not assessed

☒ =Assessed below criteria

☒ = mastery

Name_____ Grade_____ Teacher_____ Date_____

1. Letter sounds

b	c	d	f	g	h	j	k	l	m	n	p	qu	r	s	v	w	x	y

z	v	a	e	i	o	u	ā	ē	ī	ō	ū	ch	sh	th	wh	ph	ew	oo	ow	ou	oi	oy

ng	er	ir	ur	ar	or

Skill	Assessment	Initial performance	Date Criteria met
2. Phonetically regular words	☐	A_____ D_____	_____
3. Phonetically irregular words	☐	A_____ D_____	_____
4. Multisyllable words	☐	A_____ R_____	_____
5. Read sentences	☐	A_____ R_____	_____
6. Read Grade level paragraphs			

Notes:

GROUP RECORD FORM: DECODING

☐ = not assessed

⊘ = assessed: below criteria

☒ = mastery

Names	Sounds	regular words	irregular words	multisyllable words	sentences	Grade level paragraphs

Objective 2 - Regular Words

BAT	QUIP	OFF	CREW
CAT	RAN	UP	BOOM
DOG	SIT	GAME	OWL
FAT	VAT	FEEL	POUT
GOAT	WIN	LIKE	BOIL
HIT	OX	OATS	TOY
JAM	YES	CUTE	RING
KIN	ZAP	CHAT	HERD
LID	VIM	SHIN	FIR
MET	AT	THIN	CURL
NET	END	WHITE	CAR
PIN	IF	PHONE	CORD

Objective 3 - Irregular words

LIVE	TO	I	WE	SO	WORD
MOST	COME	GREAT	HE	SHE	YOU
BY	YOUR	TWO	WHO	WHERE	DOES
GIVE	WAS	ONE	SAID	MORE	MY
KNOW	WHY	LOOKED	THE	ARE	WHAT
THERE	COULD	FIND	GO	PUT	OWN
OF	THEY	WERE	THEIR	NO	ME
GOOD	OLD	ASKED	OWE		

Objective #4 - Multisyllable Words

SOMETHING	YELLOW	CRAYON	BESIDE	WINDOW	UNTIL
WAGON	SUMMER	BEAUTY	SADDLE	OVERLAND	BEYOND
ORGANIZED	COMPANY	REFUSE	WINTER	EMPTY	SUDDENLY
EXPRESS	GASOLINE	CHIMNEY	STRANGER	CRAYON	DELIGHT
FINISH	COMFORT	MIDSECTION	HOTEL	INTEREST	EQUIPMENT
RESPECTABLE	MONEY	SEPARATE	BENEFIT	FIRMLY	RENAME

Objective #5 - Reading sentences. (sentences may also be selected from the child's reading materials).

1. THE TRAIN CAME.
2. THE BLACK CAT RAN AWAY.
3. I LIVED WITH MY MOTHER.
4. THIS IS THE TALLEST BUILDING.
5. I NOTICED SOMETHING STRANGE.
6. LOU CAME HOME.
7. IT WAS SEPTEMBER.
8. KATIE OPENED HER EYES.
9. IT MIGHT TAKE ALL SUMMER.
10. WHO AM I?
11. I'LL TELL YOU SOMETHING.
12. WHERE'S MY OTHER SHOE?
13. THEY HURRIED INTO THE PARLOR.
14. CAN I GO WITH YOU?
15. MOTHER GAVE HER A SMILE.
16. COME BACK HERE!
17. SHE WAS EATING SOMETHING.
18. SUE STARED AT HER.
19. THAT'S MY MOTHER'S BLANKET.
20. YOU DIDN'T ASK.

READINGS AND HANDOUTS

I Syllabus

II Examples: Norm and Criteron Referenced Data

III Test Report Summary

IV WRAT Answer Sheet

V What Will You Teach?

VI Devising a CRT: Overview

VII Identifying Instructional Objectives (2 pages)

VIII Measurement of Academic Skills

IX Establishing Minimum Performance Standards

X To be used to establish minimum performance standards

XI Multiplication Skills Sheet

XII Criterion Referenced Assessment Individual Project Outline

XIII Criterion Referenced Test Decoding (6 pages)